Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

Title V draft permit No. V-00-039
THE GATES RUBBER COMPANY
ELIZABETHTOWN KY
March 9, 2001
JOHN LEWIS, REVIEWER
Plant I.D. # 21-093-00021
Application Log # 51206

SOURCE DESCRIPTION:

The Gates Corporation, d.b.a. The Gates Rubber Company operates a belt manufacturing and rubber mixing facility in Elizabethtown, Kentucky. The Belt Plant begins its process with the mixing of raw materials that is then calendered into long sheets of rubber stock and wrapped into rolls. This rubber material is then sent to belt manufacturing where it is made into slabs of belts on a builder. Depending on the type of belt the process is completed as either 1) cut, wrapped, cured, inspected, and packaged; 2) cured, cut, inspected, and packaged; or 3) cured, cut, ground, inspected, and packaged. The Polyflex Plant begins its process with the mixing of raw materials that is then pressure or vacuum filled into preassembled molds. The molds are then cured for varying amounts of time and demolded. The demolded slab is sent to a printer and then a cutter. The finished belts are inspected and packed for shipment to warehouses.

COMMENTS:

Type of control and efficiency:

Process Unit	Type of Control	Efficiency	Pollutant
04 Railcar unloading	Baghouse	99%	PM
04 Carbon black storage silos	Baghouse	99%	PM
04 Surge bins	Baghouse	99%	PM
05 Internal rubber mixers	Baghouse	99%	PM
07 Scrap chopping	Baghouse	99%	PM
10,13,16 Belt grinders	Cyclone/ESP	99.97%	PM
14 Full slab grinders	Cyclone	98%	PM
17 Dust transfer system	Baghouse	99.9%	
20,24 Curative tank and melter	Filter	99.9%	PM
20,24 Prewarmer	Condenser	99%	VOC, TDI*
21 Belt cutting	Cyclone/baghouse	99%	PM
23 Custom grinding	Cyclone	90%	PM
25 Mix unit	Condenser	99%	VOC
26 Belt grinding	Cyclone/baghouse	99%	PM

*** TDI is toluene diisocyanate.**

Emission factors and their source:

01, 02, 03 Boilers: Emissions for the combustion of natural gas were calculated according to AP-42, Section 1.4. Emissions for the combustion of #6 fuel oil were calculated according to AP-42, Section 1.3. Usage of fuel oil has been limited to 300 hours per year to avoid unrealistic potential emissions.
04 Carbon Black Loading, Unloading, and Storage: Emission factors were estimated from emission factors for transfers to elevated bins during concrete batching given in AP-42, Section 11.12.
05, 06 Rubber Compound Processing, Banbury Mixers: Emissions were calculated using the appropriate emission factors from the Rubber Manufacturers Association Emission Factor Application Manual, Volume 4 (RMA Manual).
07 Scrap Chopping: Emissions were estimated using emissions factors from the RMA Manual. Since no emission factors for the subject process were available, they were estimated conservatively using the emission factor for a water-cooled grinder producing V-belts constructed with toluene-based products.
08, 09, 11, 12, 15 Belt Builders and Vulcanizers: The belt building process uses toluene and a toluene-based adhesive. For the purpose of emission quantification, all of the toluene is assumed to be emitted as fugitives. Emissions from the vulcanizers are estimated using emission factors from the RMA Manual.
10, 13, 16 Belt Grinders: Emissions are estimated using emission factors from the RMA Manual. The emission factor used is for a water-cooled grinder producing V-belts constructed with toluene-based products. As a conservative approach 30% by weight of the rubber belts are assumed to be ground-off during the process.
14 Full-slab grinders: Emissions are estimated using emission factors from the RMA Manual. The emission factor used is for a water-cooled grinder producing V-belts constructed with toluene-based products. As a conservative approach 10% by weight of the rubber belts are assumed to be ground-off during the process.
17 Dust Transfer System: Emissions are estimated based on the assumption that 10% of the rubber dust being transferred is controlled by the baghouse.
20, 22, 24, 25 Urethane Belt Manufacturing: Emissions for the degasser were calculated using the assumption that 90% of the TDI present in the prepolymer was removed by the vacuum pump. Five (5) percent was assumed to be emitted at the prepolymer staywarm and intermediate tanks and the remaining 5% was assumed to remain with the product. A collection efficiency of at least 99% was assumed for the condenser associated with the degasser. Particulate emissions from the curative glovebox were calculated using the Society of Plastics Engineers method of calculating fines generated in plastic pellets being air conveyed. Melted curative emissions from the melting and holding tanks were calculated using the emission factor from the source testing conducted by Fluid Management, Inc. As a conservative approach, all D-limonine used in mold preparation is assumed to be emitted, while all the VOCs present in NixStick and Crystal 4100/7000 are assumed to be emitted. For belt washing, it is assumed that 100% of the toluene and 61% of the naptha is emitted (based on actual measurements at the source).
21 Belt Cutting: Emissions are estimated by assuming that 30% by weight of all belts are ground-off during the process.
23, 26 Belt Grinding: Emissions are estimated assuming that 10% by weight of the rubber belts are ground-off during the process.

Applicable regulations:

401 KAR 59:010, New Process Operations, applies to the particulate matter emissions from units constructed on or after July 2, 1975, which are not subject to another emissions standard with respect to particulates in 401 KAR Chapter 59. This includes the following emissions points:

> 04 Carbon Black Loading, Unloading, and Storage: Emissions of particulate shall not exceed 9.41 lb/hr for the railcar unloading and silo loading, and 7.57 lb/hr for the surge bin loading and the opacity shall not equal or exceed 20 percent.
> 07 Scrap Chopping: Emissions of particulate shall not exceed 2.34 lb/hr and the opacity shall not equal or exceed 20 percent.
> 10 Dept 45 Belt Grinders: Emissions of particulate shall not exceed 5.52 lb/hr and the opacity shall not equal or exceed 20 percent.
> 13 Dept 47 Profile Grinders (except the ones installed in 1967): Emissions of particulate shall not exceed

4.54 lb/hr and the opacity shall not equal or exceed 20 percent.

14 Full-Slab Grinders: Emissions of particulate from each grinder shall not exceed 2.34 lb/hr and the opacity shall not equal or exceed 20 percent.

16 Dept 48 Belt Grinders: Emissions of particulate shall not exceed 2.34 lb/hr and the opacity shall not equal or exceed 20 percent.

17 Dept 47 Grinding Dust Transfer System: Emissions of particulate shall not exceed 2.34 lb/hr and the opacity shall not equal or exceed 20 percent.

23 Cell 75 Grinding: Emissions of particulate shall not exceed 2.34 lb/hr and the opacity shall not equal or exceed 20 percent.

24 Cell 80 Urethane Belt Manufacturing: Emissions of particulate from the curative melter, curative glovebox, and purge tank shall not exceed 2.34 lb/hr and the opacity shall not equal or exceed 20 percent.

26 Cell 82 Grinding: Emissions of particulate shall not exceed 2.34 lb/hr and the opacity shall not equal or exceed 20 percent.

401 KAR 61:020, Existing Process Operations, applies to the particulate matter emissions from units constructed before July 2, 1975, which are not subject to another emissions standard with respect to particulates in 401 KAR Chapter 61. This includes the following emissions points:

05 Internal Rubber Mixers: Emissions of particulate shall not exceed 10.4 lb/hr and the opacity shall not equal or exceed 40 percent.

13 Dept 47 Profile Grinders (the three installed in 1967): Emissions of particulate shall not exceed 2.58 lb/hr and the opacity shall not equal or exceed 40 percent.

20 Cell 71 Urethane Belt Manufacturing: Emissions of particulate from the curative tank and curative melter shall not exceed 2.58 lb/hr and the opacity shall not equal or exceed 40 percent.

21 Cell 71 Belt Cutting: Emissions of particulate shall not exceed 2.58 lb/hr and the opacity shall not equal or exceed 40 percent.

401 KAR 59:015, New indirect heat exchangers, applies to the particulate emissions and sulfur dioxide emissions of indirect heat exchangers with a capacity of greater than one million BTU per hour that were commenced on or after April 9, 1972 (for indirect heat exchangers with a capacity of 250 million BTU per hour heat input or less). This includes the following emissions point:

03 Boiler #3: Emissions of particulate shall not exceed 0.34 lb/MMBTU actual heat input and opacity shall not exceed 20 percent. Emissions of sulfur dioxide shall not exceed 1.3 lb/MMBTU actual heat input.

401 KAR 61:015, Existing indirect heat exchangers, applies to the particulate emissions and sulfur dioxide emissions of indirect heat exchangers with a capacity of greater than one million BTU per hour that were commenced before April 9, 1972 (for indirect heat exchangers with a capacity of 250 million BTU per hour heat input or less). This includes the following emissions points:

01, 02 Boilers #1 and #2: Emissions of particulate shall not exceed 0.44 lb/MMBTU actual heat input and opacity shall not exceed 40 percent. Emissions of sulfur dioxide shall not exceed 4.5 lb/MMBTU actual heat input on any 24-hour average.

40 CFR 60 Subpart DDD -- Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry, applies to affected facilities involved in the manufacture of polypropylene, polyethylene, polystyrene, or poly-(ethylene terephthalate) as defined in Section 60.561 of this subpart. This regulation does not apply because Gates Rubber Company does not manufacture polyethylene, polystyrene, polypropylene, or PET.

40 CFR 63, Subpart U (National Emission Standards for Hazardous Air Pollutant Emissions: Group I Polymers and Resins) does not apply since Gates Rubber Company does not have any of the listed elastomer products as its primary product.

40 CFR 63, Subpart JJJ (National Emission Standards for Hazardous Air Pollutant Emissions: Group IV Polymers and Resins) does not apply since Gates Rubber Company does not manufacture any of the listed types of thermoplastic products.

Compliance Demonstration:

01, 02 Boilers #1 and #2: No compliance demonstration is necessary for the particulate matter and sulfur dioxide standards. The potential emission rates are less the than allowables for both natural gas and fuel oil #6 combustion. No compliance demonstration is required for the opacity standard when the boilers are fired with natural gas. When either boiler is using fuel oil #6, a daily visual observation will demonstrate compliance with the opacity standard.
03 Boiler #3: No compliance demonstration is necessary for the particulate matter emission limit. The potential emission rates are less than the allowable for both natural gas and fuel oil #6 combustion. For the sulfur dioxide standard, no compliance demonstration is necessary when the boiler is fired with natural gas because the potential emission rate is less than the allowable. When fired with fuel oil #6, the permittee must demonstrate compliance with a daily calculation using the equation from AP-42 listed in the permit. No compliance demonstration is required for the opacity standard when the boiler is fired with natural gas. When the boiler is using fuel oil #6, a daily visual observation will demonstrate compliance with the opacity standard.
04, 05, 07, 10, 13, 14, 16, 17, 21, 26: For all of these emission points, compliance is demonstrated with their particulate matter emission standards when their respective control devices control the particulate emissions and are operated properly in accordance with manufacturer's specifications and/or standard operating procedures as approved by the division.
20 Cell 71 Urethane Belt Manufacturing: No compliance demonstration is necessary for the particulate emission standard since the potential emission rate is less than the allowable.
23 Cell 75 Grinding: No compliance demonstration is necessary for the particulate emission standard since the potential emission rate is less than the allowable.
24 Cell 80 Urethane Belt Manufacturing: No compliance demonstration is necessary for the particulate emission standard since the potential emission rate is less than the allowable.

Alternate Operating Scenario:

The permittee can temporarily transfer builders, vulcanizers, and grinders from one department to another. The transferred equipment must be connected to similar control equipment with a control efficiency that equals or exceeds the control efficiency of the control device connected to the equipment before the transfer. The transfer must not cause an increase in the potential to emit of any pollutant at the facility. A log of transfers and changes will be kept for review.

CONSTRUCTION:

This permit authorizes the construction of 13 builders, 21 vulcanizers, 16 profile grinders, 2 full-slab grinders, and one additional cyclone/ESP system. All of this equipment will be identical or similar to existing equipment and will be attached to the same or similar control devices where applicable. Therefore they will have the same emission factors and control efficiencies, and will be in compliance with the applicable regulations immediately after their construction.

PERIODIC MONITORING:

01, 02, 03 Boilers: The permittee shall monitor opacity by performing daily qualitative visual observations on any boiler using fuel oil #6. If at any time visible emissions from the stack are perceived to exceed the applicable standard or abnormal emissions are observed, the permittee shall determine the opacity of emissions in accordance with 40 CFR 60 Appendix A, Method 9, within 24 hours of the incident.
04, 05, 07, 17, 21: The permittee shall perform a daily qualitative visual observation of emissions from the baghouses. If at any time visible emissions are perceived to be abnormal, the permittee shall determine the cause of the abnormal emissions and correct the problem as quickly as practicable.
10, 13, 16 Grinders: The permittee shall monitor the electronic warning system of each ESP at least once every eight hours.
14 Dept 47 Full-slab Grinders: The permittee shall perform a daily qualitative visual observation of emissions from the cyclones. If at any time visible emissions are perceived to be abnormal, the permittee shall determine the cause of the abnormal emissions and correct the problem as quickly as practicable.
26 Cell 82 Grinding: The baghouse that controls this grinder has an alarm that will deactivate the grinder when there is a possible problem.

EMISSION AND OPERATING CAPS DESCRIPTION:

The permittee has requested a limit to restrict the emissions of sulfur dioxide and nitrogen oxides to below the major source threshold for Title I of the Clean Air Act. The permit contains a limit of two hundred and forty (240) tons per year on these emissions. The source will demonstrate compliance with these limitations with a monthly calculation using the equation in the permit. The equation was developed using emission factors from AP-42 Section 1.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.